

1 RING BINDER ASSEMBLY DEVICE TO INSURE THE PERFECTED CLOSURE  
2 OF BINDER RINGS  
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4 FIELD OF THE INVENTION

5 The instant invention relates generally to ring mechanisms  
6 of loose leaf binders and particularly to a ring binder  
7 assembly device for repairing and preventing misalignment of  
8 the rings in a loose leaf binder.  
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10 BACKGROUND OF THE INVENTION

11 Ring binders are well-known tools for storing, displaying  
12 and organizing paper and other similar materials and are useful  
13 in a variety of settings; for example, in schools and offices.  
14 Ring binders are produced in many different shapes, styles and  
15 sizes for both aesthetic and functional purposes. The size is  
16 usually dependent upon the diameter of the ring closures, non-  
17 limiting examples include, ring closures of a half-inch, one  
18 inch, one and a half inches, 2 inches, 3 inches, 4 inches and  
19 5 inches in diameter. Additionally, the rings can be crafted  
20 into various shapes for different purposes, non-limiting  
21 examples include, D-ring and continuous curvature.

22 While binders can be crafted in a variety of shapes,  
23 styles and sizes; they all generally share the same common  
24 binder ring mechanism. This mechanism is usually spring-loaded

1 and when engaged will quickly and efficiently clamp together to  
2 join opposing sides of the rings of the binder. However, due  
3 to the pressure exerted on the spring mechanism from repeated  
4 use, part and/or all of the ring and/or rings move out of  
5 alignment and cease to clamp tightly together. The ease of  
6 sifting through the contents of the ring binder is impaired and  
7 items may be lost from the binder due to slipping out from  
8 misaligned rings. This misalignment of the rings essentially  
9 destroys the function of the binder.

10 Without a quick and/or easy method of repair, the owner of  
11 the binder often purchases a replacement, costing both time and  
12 money. Thus, there remains a need in the art to mend this  
13 fundamental weakness in the design of ring binders by repairing  
14 and preventing misalignment of the rings, extending the "life"  
15 of the binder and saving the owner both time and money.

#### 16 17 DESCRIPTION OF THE PRIOR ART

18 US 4,690,580 discloses a ring binder mechanism of the type  
19 referred to wherein the ring portions are reliably adjusted on  
20 all sides in their closed position even with heavy loading and  
21 are secured against opening of the ring closure by displacement  
22 of the ends of the ring portions.

23 US 5,765,956 discloses a device for perfected closure of  
24 the mechanism having flat rings for containers of mobile

1 sheets(binders). The device comprises rings and screws which  
2 are formed with a single presswork operation together with a  
3 strip to be placed at the disposal of the user. The latter with  
4 simple coin screws within suitable orifices formed on the  
5 strip, the latter being fixed to the internal surface of the  
6 folder. There is also provided that each ring may be closed  
7 simply by causing projections which are formed on the base of  
8 each ring to penetrate within shaped grooves, the latter being  
9 formed at the opposite end of the same ring, an operation which  
10 is easy due to the elasticity of the material which constitutes  
11 the rings.

#### 12 13 SUMMARY OF THE INVENTION

14 The instant invention provides a ring binder assembly  
15 device that can both prevent misalignment of binder rings and  
16 repair binder rings which have become misaligned. The device  
17 of the preferred invention is both a resilient and flexible  
18 structure which substantially surrounds the existing binder  
19 rings. The device is comprised of at least two hollow tubes of  
20 continuous curvature which engage upon closing of the rings to  
21 form a single unit. The hollow tubes are sized to  
22 substantially cover the entire underlying binder ring and each  
23 can be formed as unitary or segmented elements. Since it has  
24 been theorized that a funnel-shape can guide a smaller object  
25 to a specific point, one end of one of the hollow tubes is

1     molded into a funnel-shape. Through use of this funnel-shape,  
2     the device of the instant invention renders it possible to  
3     guide one part of a ring to the other part of the ring, thus  
4     preventing misalignment and forcing the rings to realign  
5     properly should they be out of place.

6             Accordingly, it is an objective of the instant invention  
7     to provide a device which prevents misalignment of binder  
8     rings.

9             It is a further objective of the instant invention to  
10    provide a device which repairs binder rings which have become  
11    misaligned.

12            It is a still further objective of the instant invention  
13    to provide a device which can repair and/or prevent  
14    misalignment of binder rings.

15            It is yet another objective of the instant invention to  
16    provide kits for preventing and repairing misalignment of  
17    binder rings comprising the engagement elements of the device  
18    of the instant invention.

19            Other objects and advantages of this invention will become  
20    apparent from the following description taken in conjunction  
21    with the accompanying drawings wherein are set forth, by way of  
22    illustration and example, certain embodiments of this  
23    invention. The drawings constitute a part of this  
24    specification and include exemplary embodiments of the present

1 invention and illustrate various objects and features thereof.

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1 BRIEF DESCRIPTION OF THE FIGURES

2       FIGURE 1 is a general view of a ring binder having the  
3 device of the instant invention surrounding the second of three  
4 rings.

5       FIGURE 2 is a broken-away view of the third ring of the  
6 binder of Figure 1; illustrating a close-up view of the ring  
7 binder mechanism known in the prior art.

8       FIGURES 3A-B Figure 3A is a broken-away view of the second  
9 ring of the binder of Figure 1; illustrating a close-up view of  
10 the ring surrounded by the device of the instant invention.  
11 Figure 3B is a transverse section of the device surrounding the  
12 ring shown in Figure 3A illustrating the exterior and interior  
13 layers of the device of the instant invention.

14       FIGURE 4 shows a close-up view of a portion of the device  
15 separated to illustrate the pieces which engage to secure the  
16 device in place surrounding the binder ring.

17       FIGURE 5 shows a cross-section of a portion of the piece  
18 of the device as shown in Figure 4.

1     DEFINITIONS AND ABBREVIATIONS

2           The following list defines terms, phrases and  
3     abbreviations used throughout the instant specification.  
4     Although the terms, phrases and abbreviations are listed in the  
5     singular tense the definitions are intended to encompass all  
6     grammatical forms.

7           As used herein, the term "loose-leaf" refers to sheets of  
8     paper or other similar material which are unbound, mobile and  
9     contain holes for insertion into ring binders.

10          As used herein, the term "existing binder ring" refers to  
11     an individual ring mechanism present in a ring binder made of  
12     metals, plastics or other similar materials; usually a binder  
13     has three existing binder rings.

14          As used herein, the term "substantially covering" refers  
15     to an amount of covering of the length of an existing binder  
16     ring by the elements of the device of the instant invention  
17     sufficient to insure that the papers inserted into the ring can  
18     be easily flipped through without snagging or becoming caught  
19     on the device.

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1 DETAILED DESCRIPTION OF THE INVENTION

2 This invention provides a device for correction and  
3 prevention of the most common problem of ring binders,  
4 misalignment of the rings with repeated use.

5 A standard continuous curvature binder ring is the most  
6 frequently utilized shape of binder ring and is the shape  
7 typically surrounded by the ring binder assembly device of the  
8 instant invention. An example of such a binder ring is shown  
9 in Figures 1 and 2, labeled as number 1. Figure 1 shows a  
10 general view of a ring binder and Figure 2 shows a broken-away  
11 view of the portion of Figure 1 labeled by line 2. Figure 2  
12 displays a close-up version of the ring binder mechanism known  
13 in the prior art. A binder ring surrounded by the device of  
14 the instant invention is labeled number 3 in Figure 1. Figure  
15 3A shows a broken-away view of this portion of Figure 1 labeled  
16 by line 3A. Figure 3A displays a close-up view of a binder  
17 ring surrounded by the device of the instant invention. The  
18 device of the instant invention is composed of at least two  
19 elements, labeled numbers 4 and 5 in Figure 3A, each a hollow  
20 tube having a shape conforming to the curvature of the binder  
21 ring which the device will surround. The at least two elements  
22 can be of unitary or segmented construction; for example,  
23 elements 4 and 5 represent continuous unitary construction  
24 wherein each element substantially covers half of the length of



1 an existing binder ring and elements 6, 7, 8 and 9 shown in  
2 Figure 3A represent segmented construction wherein each element  
3 substantially covers about a quarter of the length of an  
4 existing binder ring. Thus, as shown in Figure 3A, elements 6  
5 and 7 are engaged to form element 4 and elements 8 and 9 are  
6 engaged to form element 5, elements 4 and 5 are then engaged to  
7 form the device of the instant invention. The device is often  
8 segmented into four elements to facilitate sliding around the  
9 existing binder ring during device installation. The device,  
10 when completely assembled, should have a diameter of about one  
11 to two millimeters greater than the diameter of the existing  
12 binder ring for an appropriate fit to insure both proper  
13 functioning of the device and substantial covering of the  
14 existing binder ring when the ring is in a closed position.  
15 This is accomplished by increasing the length of elements 4 and  
16 5 to exceed the length of one half of the existing binder ring  
17 in the closed position to insure that elements 4 and 5 are in  
18 axial alignment when the device is engaged.

19 Elements 4 and 5, whether of unitary or segmented  
20 construction, are continuous curvature hollow tubes comprising  
21 an exterior shell constructed of metal or polymeric material  
22 and preferably includes an inner layer of rubber or other  
23 elastomeric material. Figure 3B illustrates element 5 of the  
24 device cut transversely to show both the exterior polymeric

1 surface and the elastomeric inner layer, labeled as numbers 10  
2 and 11 respectively in Figure 3B. The section of Figure 3A  
3 shown in detail in Figure 3B is labeled with line 3B in Figure  
4 3A. The material of the exterior surface must be durable  
5 enough to withstand pressure from the spring loaded mechanism  
6 when the mechanism is opening and closing but not too rigid to  
7 prevent the device from easily sliding over the existing binder  
8 rings. The interior coating is frequently necessary to prevent  
9 excessive degrees of movement of the device after installation  
10 since excessive movement may impair the function of the device.  
11 The fit of the device to the existing binder ring should be  
12 sufficiently secure to properly guide each half of the existing  
13 binder ring into place in a closed position. The elastomeric  
14 material coating the interior of the hollow tubes should also  
15 be flexible enough so as not to impede the sliding of the  
16 device over the existing binder rings during installation and  
17 may further include a thin layer of adhesive for increased  
18 adherence to the binder ring. The elastomeric inner layer  
19 should be one millimeter or less in width to allow sufficient  
20 space for secure enclosure of the existing binder rings.

21 The engagement of the two opposing elements 4 and 5 gives  
22 the device the ability to repair and prevent misalignment of  
23 binder rings. One end of element 4 (or element 7 if the device  
24 is of segmented construction) is crafted into a funnel shape.

1 Utilization of the funnel shape enables the device of the  
2 invention to guide one half of an existing binder ring to the  
3 other half of the ring in axial alignment, thus preventing  
4 misalignment and forcing the rings to realign properly should  
5 they be out of place. The funnel-shaped end has an increased  
6 diameter as compared with the diameter of the straight-edged  
7 end, preferably an increase of at least about 4 millimeters.  
8 Figure 4 is a close-up view of the opposing ends of elements 4  
9 and 5 in a separated position. Elements 4 and 5 are  
10 constructed and arranged for juxtaposed circumferential  
11 engagement. Figure 4 shows the funnel-shaped end labeled  
12 number 12 and the straight-edged end labeled number 13. Ends  
13 12 and 13 represent male-female mating portions which engage  
14 uniformly upon closing of the ring to substantially cover the  
15 existing binder ring to prevent and/or repair ring  
16 misalignment. Figure 5 shows a cross-section of element 4  
17 labeled number 14. The location of the cut of the cross-  
18 section is indicated by line 14A in Figure 4.

19 The engagement elements that compose the ring binder  
20 assembly device of the instant invention can be conveniently  
21 packaged as kits. The engagement elements included within the  
22 kits can be of unitary construction, segmented construction or  
23 a combination of constructions. Additionally, the engagement  
24 elements can be sized for binder rings differing in

1 circumference, for example, but not limited to, binder rings of  
2 a half inch, one inch, one and a half inches, two inches, three  
3 inches, four inches or five inches. Kits can be packaged  
4 including engagement elements of one circumference or of  
5 different circumferences.

6 In this manner, the ring binder assembly device of the  
7 instant invention extends the useful "life" of ring binders.

8 All patents and publications mentioned in this  
9 specification are indicative of the levels of those skilled in  
10 the art to which the invention pertains. All patents and  
11 publications are herein incorporated by reference to the same  
12 extent as if each individual publication was specifically and  
13 individually indicated to be incorporated by reference. It is  
14 to be understood that while a certain form of the invention is  
15 illustrated, it is not to be limited to the specific form or  
16 arrangement herein described and shown. It will be apparent to  
17 those skilled in the art that various changes may be made  
18 without departing from the scope of the invention and the  
19 invention is not to be considered limited to what is shown and  
20 described in the specification. One skilled in the art will  
21 readily appreciate that the present invention is well adapted  
22 to carry out the objectives and obtain the ends and advantages  
23 mentioned, as well as those inherent therein. Changes therein  
24 and other uses will occur to those skilled in the art which are

1 encompassed within the spirit of the invention and are defined  
2 by the scope of the appended claims. Although the invention  
3 has been described in connection with specific preferred  
4 embodiments, it should be understood that the invention as  
5 claimed should not be unduly limited to such specific  
6 embodiments. Indeed, various modifications of the described  
7 modes for carrying out the invention which are obvious to those  
8 skilled in the art are intended to be within the scope of the  
9 following claims.

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